

# mtDNA

**Most DNA is packed tightly** into the cell's nucleus, but there is also a tiny loop of genetic material, called mitochondrial DNA (mtDNA), in a part of the cell known as the mitochondria. Each cell has only one nucleus, but there are hundreds of mitochondria in a given cell, each bearing a copy of the owner's mtDNA sequence. Because of its relative abundance in the cell, mtDNA can often be extracted from old or degraded samples in which nuclear DNA is sparse.

Comparing an individual's mtDNA profile with the profile of a potential maternal relative is particularly useful for identification, because mtDNA is inherited only from the mother. When an egg cell is fertilized, the 23 chromosomes from the nucleus of a sperm cell join the 23 chromosomes inside the egg. The egg cell's mtDNA remains unaffected, while the sperm's mtDNA is left behind.

